



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

**Containment System Guidance for Permitted
Container Storage Areas**

Compliance & Response Branch
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Under the state hazardous waste regulations, any container storage area that is permitted (40 CFR 264, Subpart I) or required to have a permit (interim status regulations at 40 CFR 265, Subpart I) must be provided with a containment system. The design and operation of the containment system should ensure that the wastes handled in the container storage area will not escape the storage area if leakage or spillage occurs. The requirements for containment systems for container storage areas are specified in 40 CFR 264.175. Specific written descriptions demonstrating compliance with 40 CFR 264.175 must be provided in the permit application in accordance with 40 CFR 270.15.

The purpose of this document is to set forth the design and operating guidance for container storage area containment systems. Specific guidance in this document that serves to clarify state rules will be included in a facility's permit as specific conditions. The guidance does not apply retroactively. It will, however, apply to new permits, permit renewals and permit modifications.

Containment for Container Storage Areas that Store Containers with Free Liquids

Containment Design - General: According to 40 CFR 264.175(b)(1), "A base must underlie the containers which is free of cracks or gaps and must be sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed." The containment system should have adequate structural strength to withstand the stresses of daily operation.

According to 40 CFR 264.175(b)(2), "The base must be sloped or the containment system must be otherwise designed and operated to drain and remove liquids resulting from leaks, spills, or precipitation, unless the containers are elevated or are otherwise protected from contact with accumulated waste." Sumps or trenches may be provided to achieve this. The capacity of the sumps/trenches must be sufficient to prevent containers from contacting any accumulated liquids. The accumulated liquids can also be diverted to another container or tank. The containers can be elevated by means of pallets or otherwise protected from contact with accumulated liquids.

The container storage area must have adequate containment area based on container management practice, such as stacking height. The containment system must have sufficient capacity to contain 10% of the total volume of the containers with free liquids or the volume of the largest container, whichever is greater (40 CFR 264.175 (b)(3)). Additional capacity for a 25-year, 24-hour rainfall and other run-on must be provided, if applicable. Containers that do not contain free liquids need not be considered in this determination but must follow the requirements listed below. Capacity calculations must include volume displaced by structure, equipment, other materials stored, etc.

Spilled or leaked waste and accumulated precipitation must be removed from the sump or collection area expeditiously to prevent overflow from the collections system (40 CFR 264.175 (b)(5)). Permit conditions will allow up to 24 hours from the time of detection for waste removal. If the facility can demonstrate to the IDEM that the accumulated liquids cannot be removed within 24 hours, additional time may be allowed on a case-by-case basis. If the collected material is a hazardous waste under 40 CFR 261, it must be managed as a hazardous waste in accordance with all applicable requirements of 40 CFR parts 262 through 266. If the collected material is discharged through a point source to waters of the United States, it is subject to the requirements of section 402 of the Clean Water Act, as amended.

Containment Design - Concrete: Many permitted container storage areas are constructed of a concrete base with curbing or walls. Concrete structures should be constructed according to accepted industrial standards such as American Concrete Institute (ACI) standards. Since concrete may not be sufficiently impervious to some wastes, a coating that is adequately compatible and impervious to a majority of the materials handled in the container storage area may be necessary to achieve compliance with these rules. The coating should be applied according to manufacturers' recommendations. Generally, the base must be cleaned and sandblasted prior to the application of the coating. This will increase the adhesion and durability of the coating. The coating should also be reapplied routinely at a frequency depending on the usage, such as daily loads on the containment system, movement of containers, pallets and equipment, exposure to weather conditions, etc. Many manufacturers specify the frequency for reapplying the coating. The coating also provides protection for concrete. As an alternative to a coating, a flexible liner that is compatible and impervious to the materials handled in the container storage area may be used, if suitable for the operation at the facility.

The facilities also have the option of demonstrating that a concrete containment system without a coating is compatible and sufficiently impervious to the materials handled in the container storage area and to any precipitation/run-on. This option applies primarily to new facilities/units, but may be applicable if the unit was originally designed to resist cracking under heavy use. This demonstration needs to address both the permeability of the concrete relative to representative wastes stored and the structure design relative to its ability to resist cracking. Information compiled should include acceptable analytical testing, such as a laboratory testing that simulates the containment system conditions and the unit design information that will demonstrate the ability to resist cracking for the life of the unit. This information should be submitted in a permit application in accordance with 40 CFR 270.15 (a)(1) and kept on-site for IDEM evaluation.

If the base has expansion/construction joints, then either chemically resistant waterstops (embedded in the concrete) or equivalent external systems (e.g., battens with caulking or sealant systems) are acceptable. Any new containment structure should incorporate integral waterstops at the joints.

Containment Design - Asphalt: Containment systems constructed of asphalt paving material are not generally acceptable because asphalt is not deemed to be sufficiently impervious to many hazardous wastes.

Containment System - Inspection and Repair: According to 40 CFR 264.174, at least weekly, the owner or operator must inspect the container areas for leaks and deterioration of the containment system caused by corrosion or other factors. If the base, concrete, liner, or coating is cracked or otherwise damaged, the facility must repair the damage promptly and properly. The permit will allow up to fifteen days from the time of detection to complete the repair. Any concrete repair should be performed using an appropriate repair method (e.g., ACI standards, manufacturers' recommendations for repair of coating) based upon the nature, cause and extent of the damage, and should prevent future damage at the same location. The coating should be applied to the damaged area after each repair to ensure compliance with 40 CFR 264.175.

Container Storage Areas that Store Containers without Free Liquids

Storage areas that store containers holding only wastes that do not contain free liquids need not have a containment system provided the storage area is sloped or is otherwise designed and operated to drain and remove liquid resulting from precipitation. If the storage area/containment system is not sloped, the containers can be elevated or otherwise protected from contact with accumulated liquids. Storage areas that store containers holding the wastes containing FO20, FO21, FO22, FO23, FO26, and/or FO27 wastes must have a containment system even if the wastes do not contain free liquids.

Container Storage Areas that Store Incompatible Wastes

As per 40 CFR 264.177, a storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device. The purpose of this is to prevent fires, explosions, gaseous emission, leaching, or other discharge of hazardous waste or hazardous waste constituents which could result from the mixing of incompatible wastes or materials if containers break or leak. The facility may be required to demonstrate to the IDEM how mixing of incompatible materials will be prevented particularly in regard to sump system design and container stacking practices.

Other types of containment systems for container storage areas, such as portable containment, may be acceptable if they meet the rules as summarized in this document.

If you need additional information, or have any questions or concerns, please contact staff of the Office of Land Quality, Compliance and Response Branch at 317-234-6932 or 1-800-451-6027 or visit www.idem.IN.gov/4110.htm.